Minutes of the RSC Meeting of Oct. 6, 2004

Subject: New RHIC Secondary collimators

Present: D. Beavis, E.T. Lessard, L.W. Glenn, L. Ahrens, D. Paquette, M. Van Essendelft, K. Yip, R. Karol, A. Dress, R. Lee, and P. Cirnigliaro

It has been proposed that the new secondary collimators can be used without soil caps and that the potential for soil activated is sufficiently low that it will be monitored by removal soil samples. These samples will be reviewed and appropriate action taken as indicated by the results.

The committee recommends that this approach be used.

Presentations were provided to the committee by R. Karol (attachement 1) and A. Dress (attachment 2). R. Karol's presentation discusses the results of soil activation measurements using removable soil samples. A. Drees' presentation examined beam losses and estimates for beam into the present primary collimators and the new secondary vertical collimators at 6 (yellow beam) and 10 (blue beam) O'clock.

The new secondary vertical collimators are expected to intercept about 10% of the amount of beam that the primary collimators intercept. Removal soil samples have been placed near the primary collimators in previous RHIC runs. The activation results from the removable soil samples demonstrate that the primary collimators have produced soil activation levels corresponding to 67% of the BNL guidance for ^{22}Na for the two previous runs. This suggests that based on past operations the new secondary collimators should not approach the BNL guidance. The Primary collimators are under soil caps. The new vertical secondary collimator at 10 O'clock is under the beam dump cap so any potential soil activation cannot be leached. The vertical secondary collimator at 6 O'clock is not under a cap. If future operations are reasonably represented by operations of the past, the new secondary collimator at 6 O'clock should not be an issue for soil activation.

A.Dress presented conservative estimates for beam losses on the collimators for past and future operations. The estimates for past operation suggest that the past removal soil samples for the primary collimators should have had a factor of 15 or more activation. It was clear that there were several factors used in the estimate, which made the estimate very conservative. The committee did not consider this uncertainty to be a problem with the technique of removable soil samples or Monte-Carlo programs to estimate the soil activation but rather the accumulation of conservative factors used in the comparison.

The committee decided that there was no need to introduce new operational procedures protecting the soil from beam on the new secondary collimators.

The committee recommends:

(CK-RHIC-FY2005-404) Ensure that the removable soil samples are in place near the new secondary collimators before beam is introduced into RHIC. Future operations will have this done via existing safety section programs.
(CK-RHIC-FY2005-proton-405) The removable soil samples are to be replaced after about 3 months and measured. The measurements will be reviewed and appropriate action taken based on the results. The change over from copper to polarized proton operations is a natural time to change the soil samples.

(CK-RHIC-FY2005-406) The area near the new secondary collimators should be inspected for any weak shielding locations and penetrations within 30 meters.

(CK-RHIC-FY2005-407) The committee requested that an MCNPX calculation be done to verify that the flux of hardons with energy greater than 20 MeV does not increase with initial development of the hadronic cascade as it develops in the soil.

Attachments (file copy only)

1) R. Karol, Proposal to Use removal soil samples at RHIC Collimators to Ensure Groundwater Contamination Limits are not exceeded.
2) A. Dress, RHIC Overview.

CC: RSC Minutes file
RHIC file